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EXAMINER	
KITOV, ZEEV V	
ART UNIT	PAPER NUMBER
2836	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/591,448	SEITZ, JOHANN	
	Examiner	Art Unit	
	ZEEV KITOV	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 5, 7 - 11, 13 - 15, 17 - 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 5, 7 - 11, 13 - 15, 17 - 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Examiner acknowledges a submission of the amendment and arguments filed on March 23, 2010. Claims 1 and 11 are amended. A new office Action follows.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. An amended version of the claims provided in response to 112(2) rejection in a previous Office Action Applicant has amended Claim 1 limitation as follows: "the fuse of the second protective element is configured to protect the semiconductor against an overload and against overload due to start-up of the motor". However, an attempt of the amendment to picture the start-up inrush current problem as a part of a general overload problem does not answer the questions raised previously in 112(2), namely the start-up inrush current (overload) problem is a special problem, solution of which cannot be combined with normal overload protection. As well known in the art, at the time of start-up the over-voltages and over-currents called inrush currents may occur. The fuse provides protection against overload by blowing up and disconnecting the circuit. As best understood by the Examiner, to providing protection against overload due to start-up means that the fuse should blow up when

the inrush current exceeds the fuse rating. Accordingly, if the fuse is intended for protection against the overload due to start-up the current and timing ratings or fuse should be set such that any time the user starts up the system the fuse would blow up requiring its immediate replacement and such system would be practically inoperative. When the fuse is used for overload protection, normally the designers set the current and timing rating of the fuse such that it would not melt at the time of start-up.

Therefore, it is totally unclear how the same fuse can protect against both normal overload (over-current) and the start-up inrush (overload) currents altogether, since these two kinds of protection demand substantially different current and timings ratings of the fuse and therefore are incompatible. If the Applicant has found some solution resolving the recited problem it is not disclosed in the instant Specification.

Therefore, the recited amendment to Claim 1 does not resolve the problem raised in 112(2) in the previous Office Action. For purpose of examination it is interpreted as follows: "the fuse of the second protective element is configured to protect the semiconductor against an overload".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar (US 5,896,021) in view of Guery et al. (US 4,596,911). Regarding Claims 1 and 11, Kumar discloses following: a protective device for a load branch circuit, comprising: a first protective element (128 in Fig. 1) within the protective device to provide protection of a motor (M1, M2 in Fig. 1) outside of the protective device and line protection; a second protective element (126 and 134 in Fig. 1), the second protective element being connected in series with the first protective element and located on a line side of the first protective element, including a fuse (126 and 134 in Fig. 1), to provide short-circuit protection of the first protective element and the motor, wherein: the second protective element is designed to provide overload protection for an electronic switching device (inverter group 1 in Fig. 1) including a semiconductor, the electronic switching device being positioned between the protective device and the motor, the electronic switching device being in series with the first protective element, and wherein the first protective element includes an overload relay, i.e. circuit breaker (128 in Fig. 1) in series with the second protective element. In the Kumar device, the fuse of the second protective element is capable to protect all the elements located downstream, including the circuit breaker (128 in Fig. 1), electronic switching device (inverter group 1 in Fig. 1) and eventually the motor (M1, M2 in Fig. 1) against overload, such as for example, the short circuit in the motor, or short circuit in the switching device. In any case if the circuit breaker for any reason does not trip (for example due to malfunction) the fuse should blow up when being sufficiently heated and melted. Therefore, the fuse cannot provide

protection to a motor alone without protecting also the switching device since when the fuse is blown up, it disconnects the power supply to all downstream elements, i.e. the motor the switching device and the circuit breaker, thus protecting them all.

However, it does not disclose the fuse and circuit breaker being mechanically integrated. Guery et al. discloses the circuit breaker case structure (130 in Fig. 9) containing the fuse inside the fuse holder (129 in Fig. 9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Kumar device by incorporating the fuse into the integrated structure with the circuit breaker according to teachings of Guery et al. because as Guery et states (col. 1, lines 24 – 31): "any installation must associate with the circuit breaker (manual or automatic) a specific device ensuring the isolating function such for example an isolating switch, an isolating fuse holder, isolating terminals, etc. This addition of an isolating switch therefore increases the complexity of the installation and increases its cost". Therefore, according to Guery et al. combining the circuit breaker and the fuse in the same integrated structure will reduce the complexity of the structure and cost of the device.

As to the electronic switching device located outside of the protective device, Guery et al. discloses typical overload protection device (Fig. 9) including both the circuit breaker and the fuse (129 in Fig. 9), while not including any other element such as electronic switching device. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Kumar system by arranging the electronic switching device, i.e. inverter outside of the protective device according to teachings of Guery et al., because manufacturing the

circuit breaker and fuses as equipment separate from other equipment particularly separate from the protected load elements was recognized as part of the ordinary capabilities of one skilled in the art. See *Dann v. Johnston*, 425 U.S. 219, 189 USPQ 257 (1976).

As to a switch within the protective device operatively coupled to the first protective element and configured to turn of the electronic switching device, in the Kumar device modified according to teachings of Guery et al. the fuse is being incorporated into the same modular structure as the circuit breaker (see above) and any circuit breaker including those of Kumar (126, 134 in Fig. 1) inherently includes the switching element in either electromechanical or semiconductor form, i.e. either contacts operated by the electromechanical relay or the semiconductor switching element, since the concept of the circuit braking is based on interruption of the power supply when the some failure occurs, the operation which is impossible without the switch.

Regarding Claim 11, the Kumar device modified according to teachings of Guery et al. discloses an equivalent first means for providing motor protection and line protection, an equivalent of the first means, i.e. the circuit breaker(128 in Fig. 1 of Kumar); and an equivalent of the second means, i.e. fuse (126 in Fig. 1 of Kumar) located according to teachings of Guery et al. within the single protective device (130 in Fig. 9 of Guery) for providing short-circuit protection of the first protective element and the motor, wherein the second equivalent means is designed to provide overload protection for an electronic switching device, the electronic switching device being in

series with the first equivalent protective means, and wherein the first equivalent means includes an overload relay (128 in Fig. 1 of Kumar) in series with the second protective means (126 in Fig. 1 of Kumar).

As per switching device located outside of the protective device, and a switch within the protective device operatively connected to the first protective element, the switch configured to turn of the electronic switching device; these both limitations have been addressed in Claim 1 rejection above. As per protection against both overload and against overload due to a start-up of the motor, this issue has been addressed in USC 112(2) rejection.

Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar (US 5,896,021) in view of Guery et al. (US 596,911) and current design practice. As per Claim 7, it requires a trip response of the fist protective element, i.e. circuit breaker, being coordinated with the rating of a protected switching device. Such requirement is a normal part in the rules of protection system design, since otherwise if it is not coordinated, i.e. if the trip threshold is set higher than a maximum current that the switching device can withstand, the switching device will be damaged thus defeating a purpose of use of the protection system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to set a threshold of the protection device such that it would effectively protect all the elements of the circuit.

As per Claim 17, the same considerations as in Claim 7 rejection are valid with respect to the trip response of the first equivalent means (see Claim 7 rejection above).

Claims 5, 10, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar (US 5,896,021) in view of Guery et al. (US 596,911) and Damiano et al. (US 4,691,197). Regarding Claims 5, 10, 15 and 20, Damiano et al. discloses an auxiliary switch (SCR in Fig. 1) used to signal the status of the fuse (12 in Fig. 1, col. 2, line 11 - col. 3, line 42) located within the protective device as shown in Fig. 4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the auxiliary switch and indicator to indicate the status of the fuse, because it is necessary to attract attention of maintenance personnel to take care of a fault problem when it is necessary.

Regarding Claims 15 and 20, Damiano et al. discloses an equivalent means for signaling the status of the fuse (see above Claims 5 and 10 rejections).

Claims 3, 4, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar (US 5,896,021) in view of Guery et al. (US 596,911) and Frank (US 2,324,852). Regarding Claims 3, 4, 13 and 14, Kumar et al. discloses the fuse (126 in Fig. 1). However, it does not disclose the fuse being transferable to maintenance position. Frank discloses a safety switch (Fig. 1) used with the fuse box (Fig. 10). According to Frank, in this structure the switch handle may be locked against movement out of the open circuit position, while at the same time permitting the covers 38 or 28 to be moved for exposing the interior of the switch for inspection, fuse replacement, or maintenance (page 2, right column, lines 57 - 68). It would have been

obvious to one of ordinary skill in the art at the time the invention was made to further modify the Kumar system according to teachings of Frank, i.e. providing a fuse box and a locking mechanism to the fuse box in order to secure safe operation during fuse replacement or maintenance.

Claims 8, 9, 18, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar (US 5,896,021) in view of Guery et al. (US 596,911), Al-Sabah (US 6,315,617) and Frank. An amended version of the Claims requires the switching device being located outside of the protective device (which is addressed in Claim 1 rejection) and having the same width as the protective device (Claims 8 and 18). Al-Sabah discloses a power distribution apparatus which includes the switching device, i.e. power converter (56 in Fig. 13) located outside and plugged into the protecting device, i.e. circuit breaker (48 in Fig. 13). As shown in Fig. 13, the switching device and the protecting device have the same width of their contacting surfaces. It is because Al-Sabah uses a modular design approach, which as well known in the art, provides following advantages: making easier future modifications, allowing small modifications to existing modules to fit customers needs, adding or subtracting modules to fit the customer's needs, taking module out, modify it, insert and as a result having a totally different circuit breaker. Making contacting surfaces of equal width saves a space and allows easy replacement of the modules.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Kumar system by arranging the main

elements of the system in a modular form, i.e. having the same mounting dimensions because (1) as well known in the art, the circuit breakers today are mostly manufactured with standard modular dimensions when all the modules with rare exception have the same mounting dimensions and (2) exercising the modular approach will bring the recited above advantages and (3) making contacting surfaces of the modules of equal width saves a space and allows easy replacement of the modules.

Regarding Claims 9 and 19, Frank discloses a safety switch (Fig. 1) used with the fuse box (Fig. 10). According to Frank, in this structure the switch handle may be locked against movement out of the open circuit position, while at the same time permitting the covers 38 or 28 to be moved for exposing the interior of the switch for inspection, fuse replacement, or maintenance (page 2, right column, lines 57 - 68). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the Kumar system according to teachings of Frank, i.e. providing a locking mechanism to the fuse box in order to secure safe operation during fuse replacement or maintenance. As to motivation for modifying the Kumar circuit in view of Guery, see Claims 3, 4, 13 and 14 above.

Regarding Claim 21, Kumar discloses the protective device and the switching device. Bueher et al. teaches the modular structure of the protective device. As to the protective device being pluggable, according to online encyclopedia Answers.com and Wikipedia, "In systems engineering, modular design — or "modularity in design" — is an approach that subdivides a system into smaller parts (modules) that can be

independently created and then used in different systems to drive multiple functionalities. Besides reduction in cost (due to lesser customization, and less learning time), and flexibility in design, modularity offers other benefits such as augmentation (adding new solution by merely plugging in a new module), and exclusion". Accordingly, modular design assumes easy replacement of modules by plugging them in and out. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Kumar in view of Guery et al. modular protective device arranging the device as being pluggable into the base device i.e. into the switching device of because (1) the modular design of the protective mechanism brings recited above advantages as stated by Bueher, and (2) the module being pluggable is well known and widely used feature of the module, which facilitates the modular design advantages.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

Applicant amended Claim 1 in response to 112 (2) rejection as follows: "the fuse of the second protective element is configured to protect the semiconductor against an overload and against overload due to start-up of the motor". As stated in 112(2) rejection, "It is totally unclear how the fuse can be used to protect the semiconductor against the start-up of the motor. The fuse normally protects the equipment against such event as the short circuit condition by blowing and disconnecting the power supply. The sentence seems to mean that the fuse provides the same type of protection by

acting and protecting against both the short circuit and start-up conditions in the only way it can, i.e. by blowing up. However, such action (1) contradicts the Specification which states that the fuse provides only short circuit protection [0023] and never mentions providing the start-up protection. The only other sentence pertinent to the fuse is [0028]: "These have both a suitable overload capability for motor start-up and low interrupting current values to protect the semiconductor in the switching device 2". The sentence is interpreted as the fuse has a proper rating for protecting semiconductor device against the overload and for not interfering with the start-up period of the motor. Indeed, it would be totally counterproductive to design fuse such that it would blow-up any time the motor starts-up. For purpose of examination the sentence is interpreted as follows: "the fuse of the second protective element is configured to protect the semiconductor against an overload". Attempt of the amendment to picture the start-up inrush current problem as a part of a general overload problem does not answer the questions raised in 112(2), namely the start-up inrush current problem is a special problem, which requires its own solution. Normally designers set the current and timing ratings of the fuse such that it would not melt at the time of start-up, since otherwise such "protection" would be counterproductive, i.e. any time the user starts the system the fuse would blow up requiring its immediate replacement, thus making the system practically inoperative. Therefore, it is totally unclear how the same fuse can protect against both normal overload (over-current) and the start-up inrush currents, altogether since these two kinds of protection require different rating of the fuse and therefore are

incompatible. Therefore, the amendment the recited amendment to Claim 1 does not resolve the problem recited in 112(2).

Other Arguments are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman

can be reached on (571)-272-2391. The fax phone number for organization where this application or proceedings is assigned is (571) 273-8300 for all communications.

/Z. K./
Examiner, Art Unit 2836
4/26/2010

/Stephen W Jackson/
Primary Examiner, Art Unit 2836